

FIG. 1

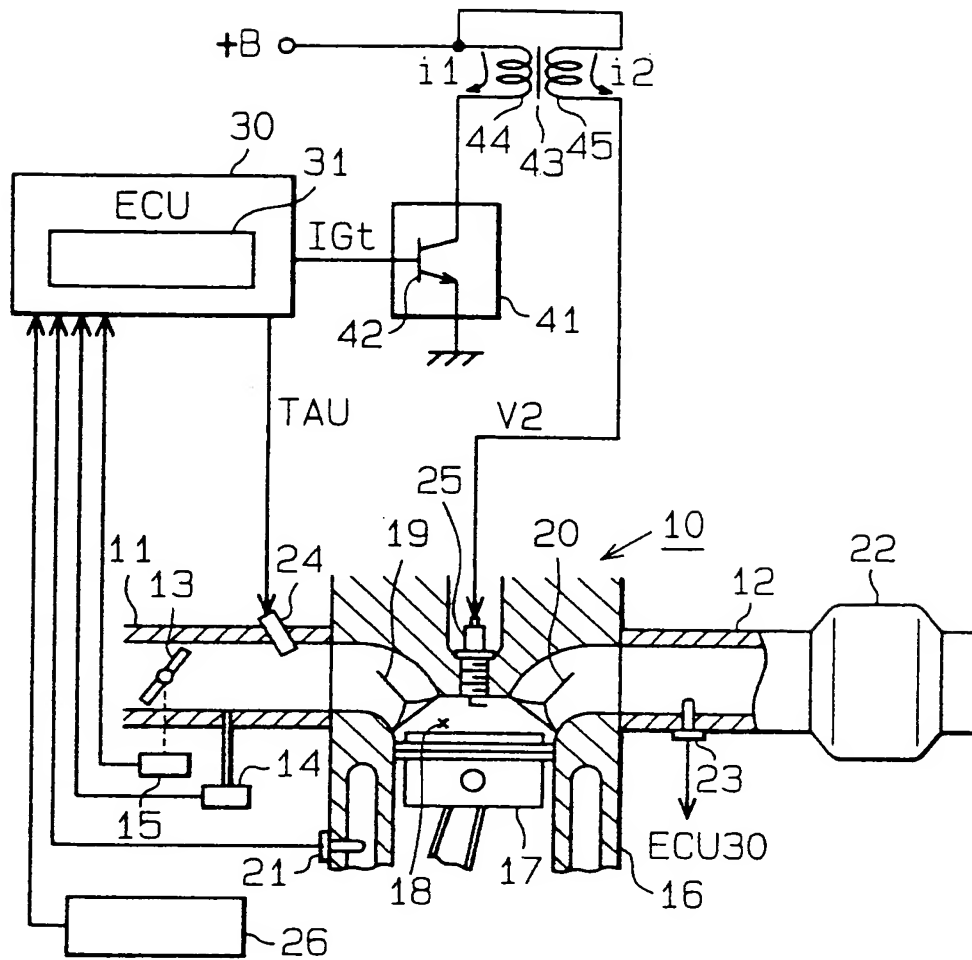


FIG. 3A

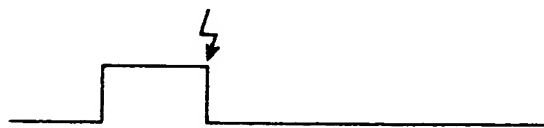


FIG. 3B

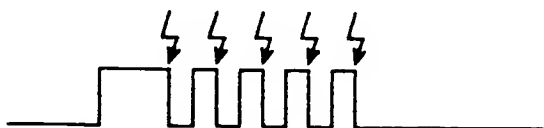


FIG. 2

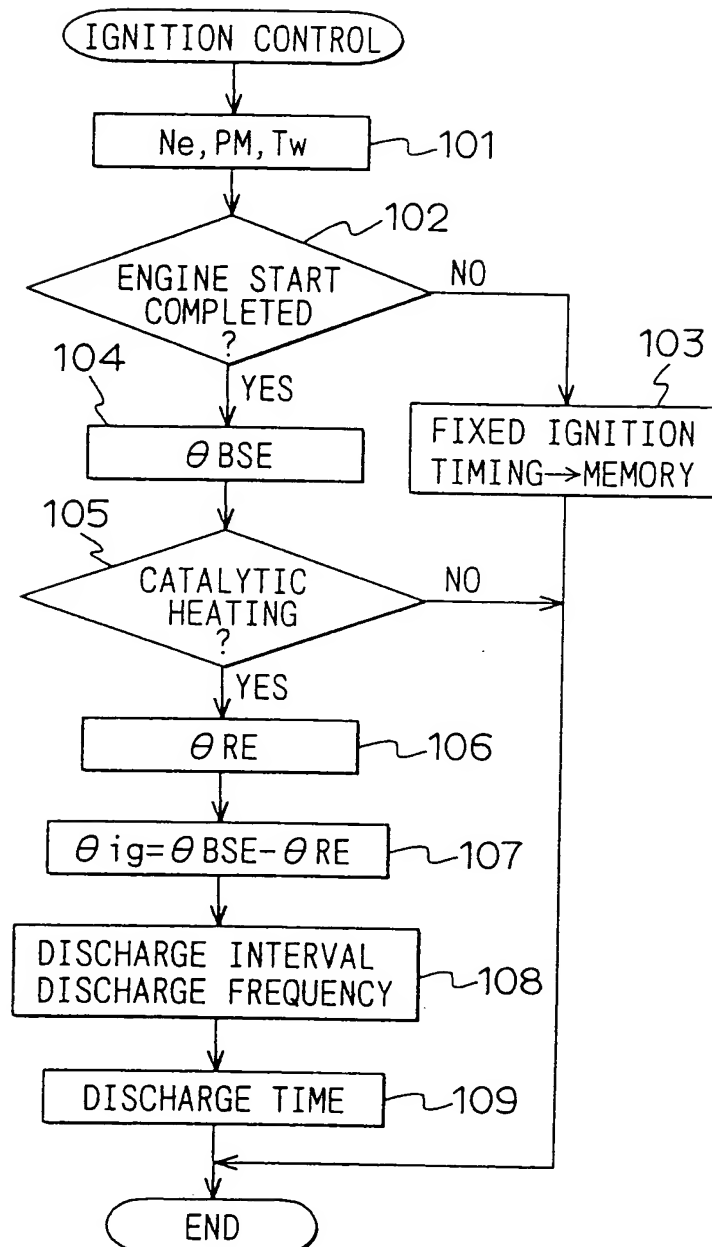


FIG. 4

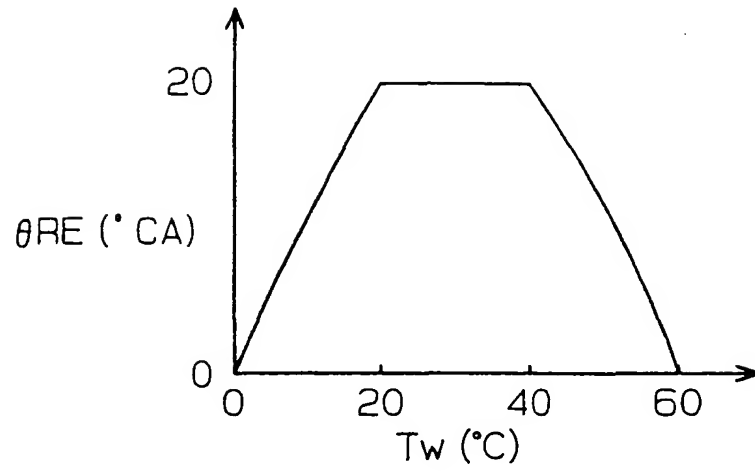


FIG. 5A

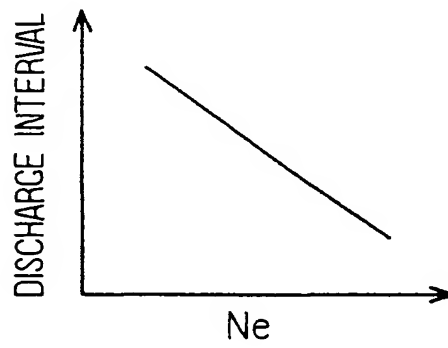


FIG. 5B

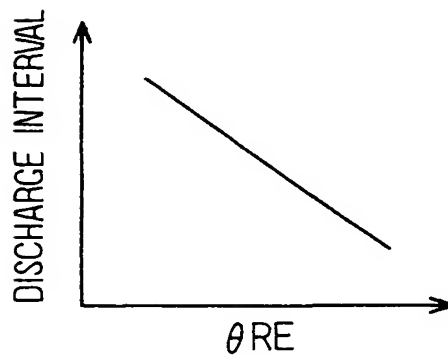


FIG. 6A

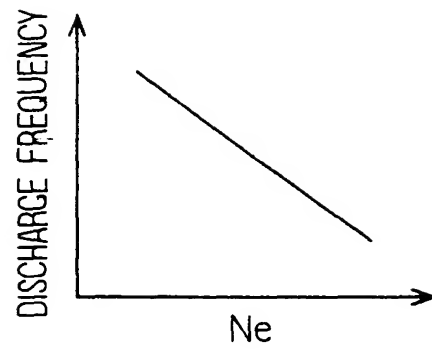


FIG. 6B

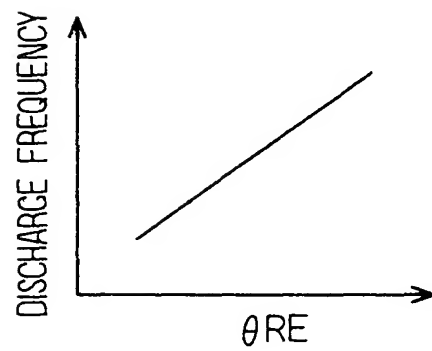


FIG. 6C

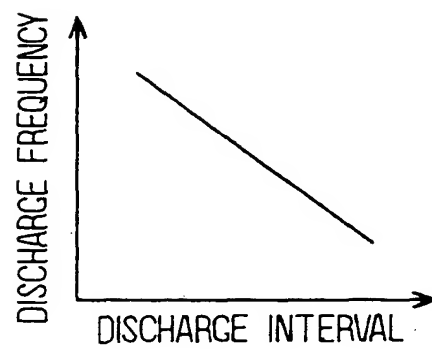


FIG. 7

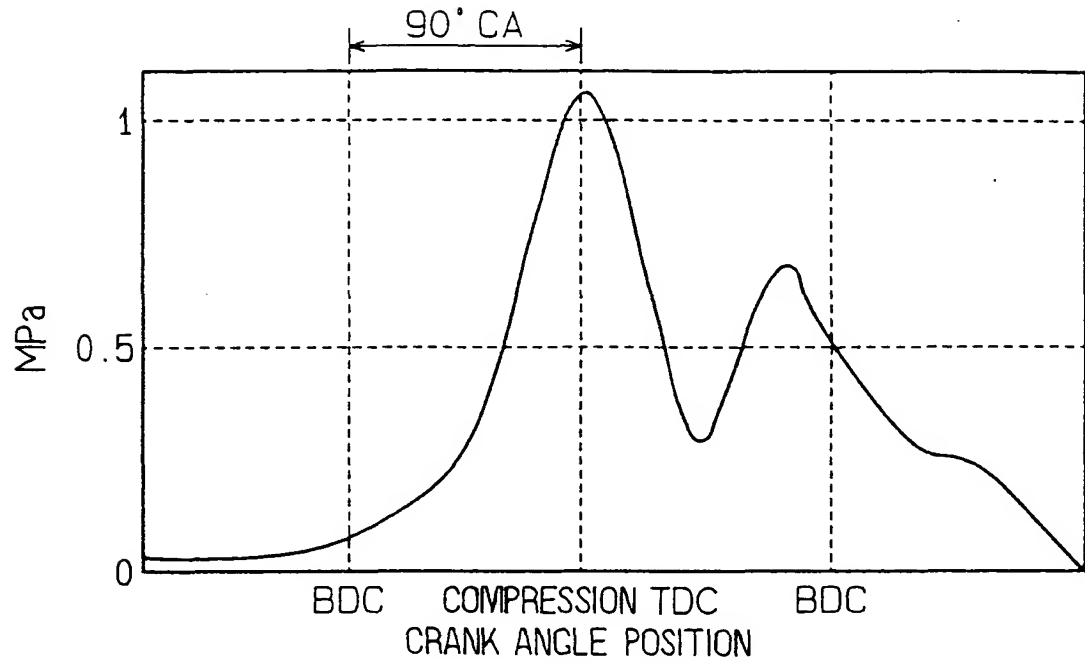


FIG. 8

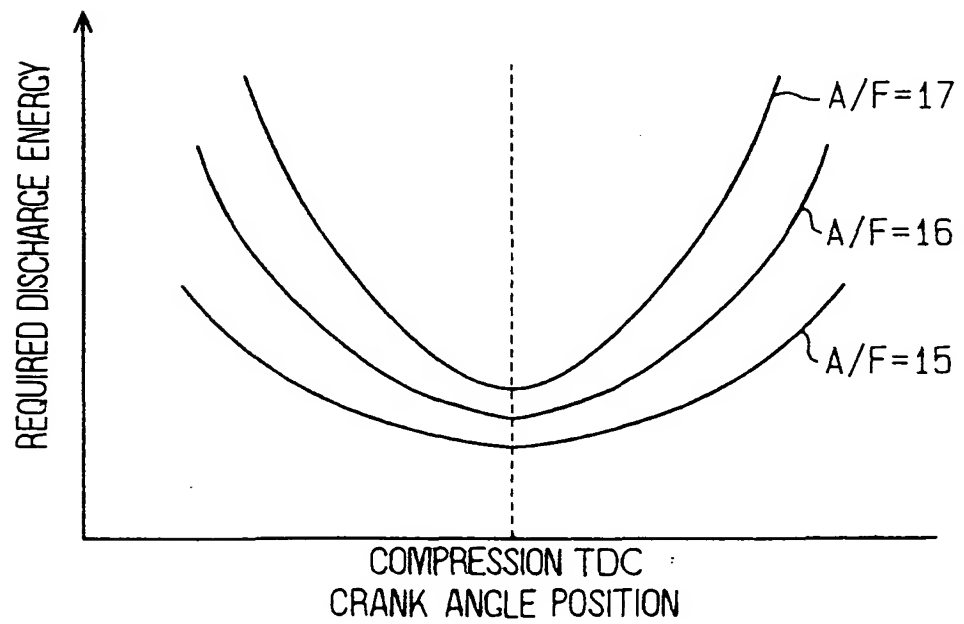


FIG. 9

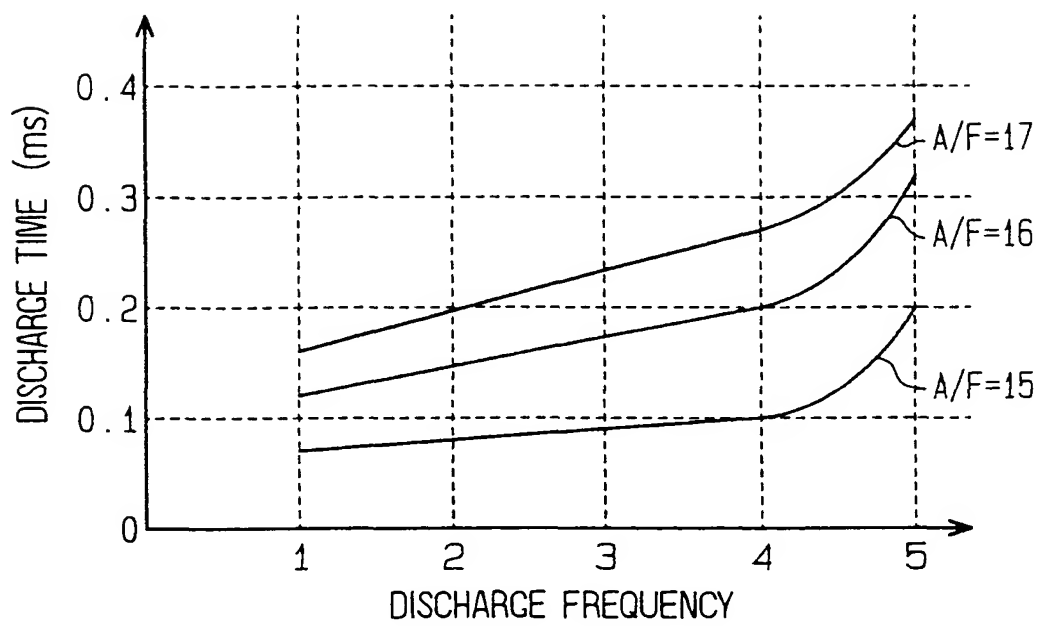


FIG. 10

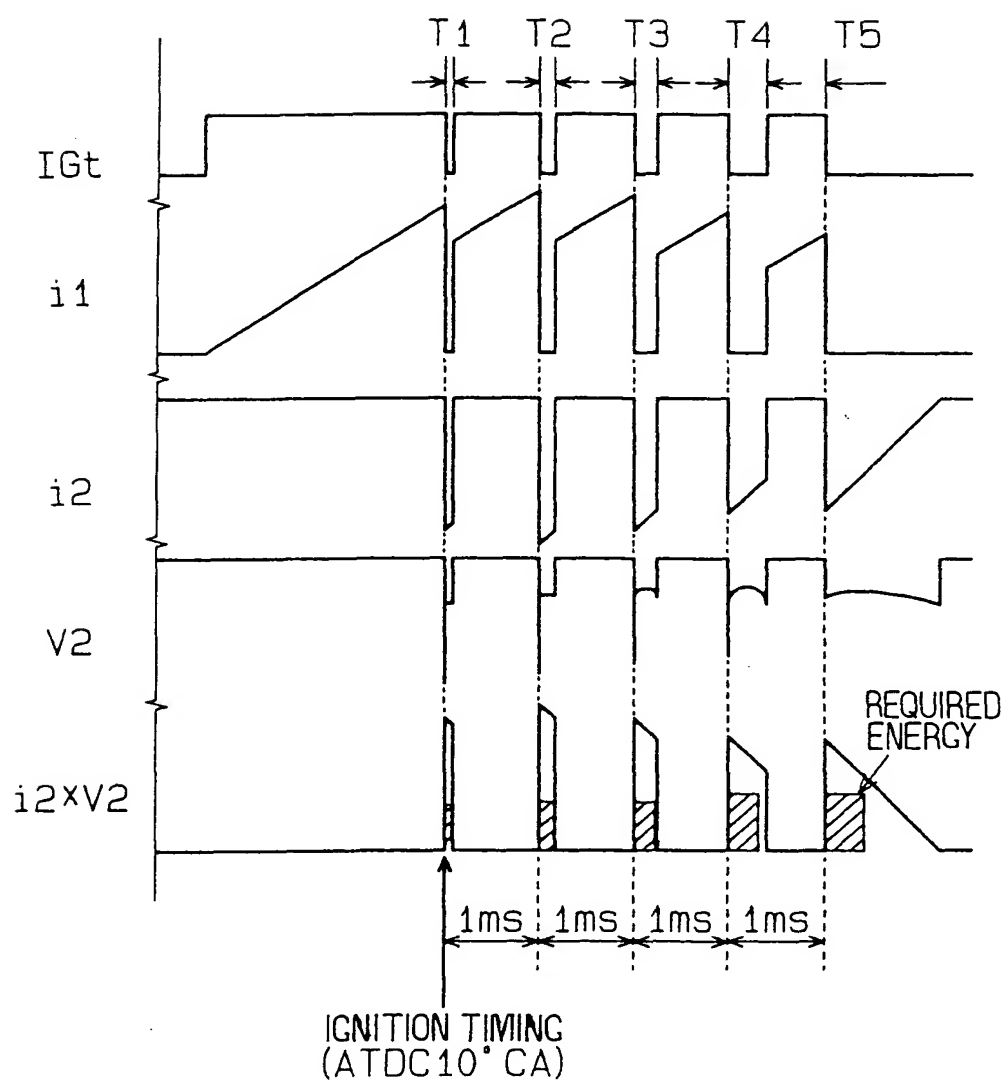


FIG. 11

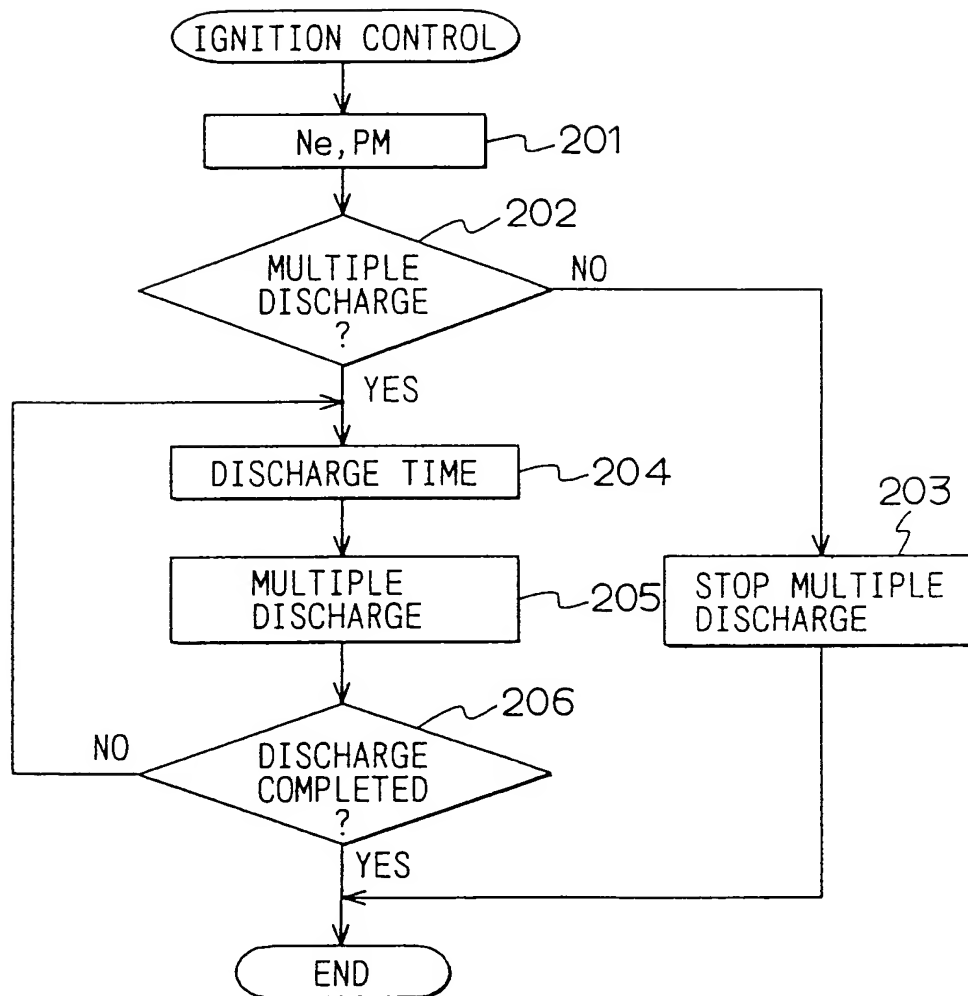


FIG. 12

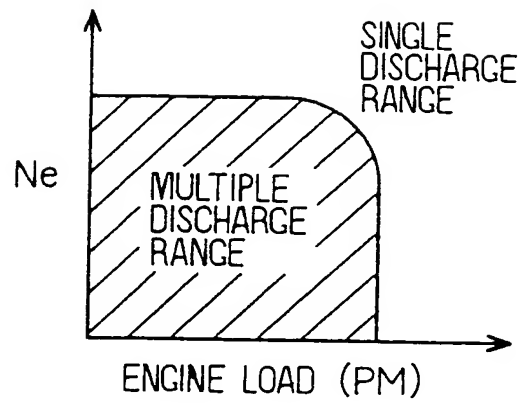


FIG. 13

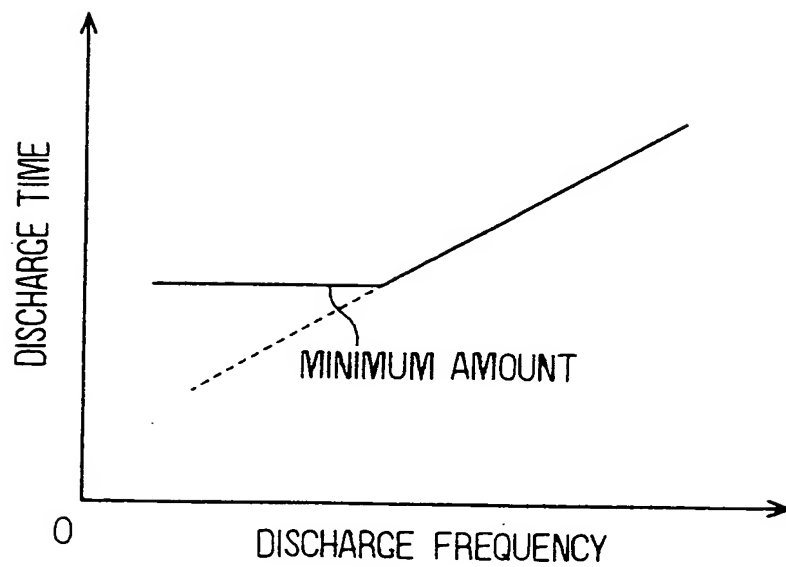
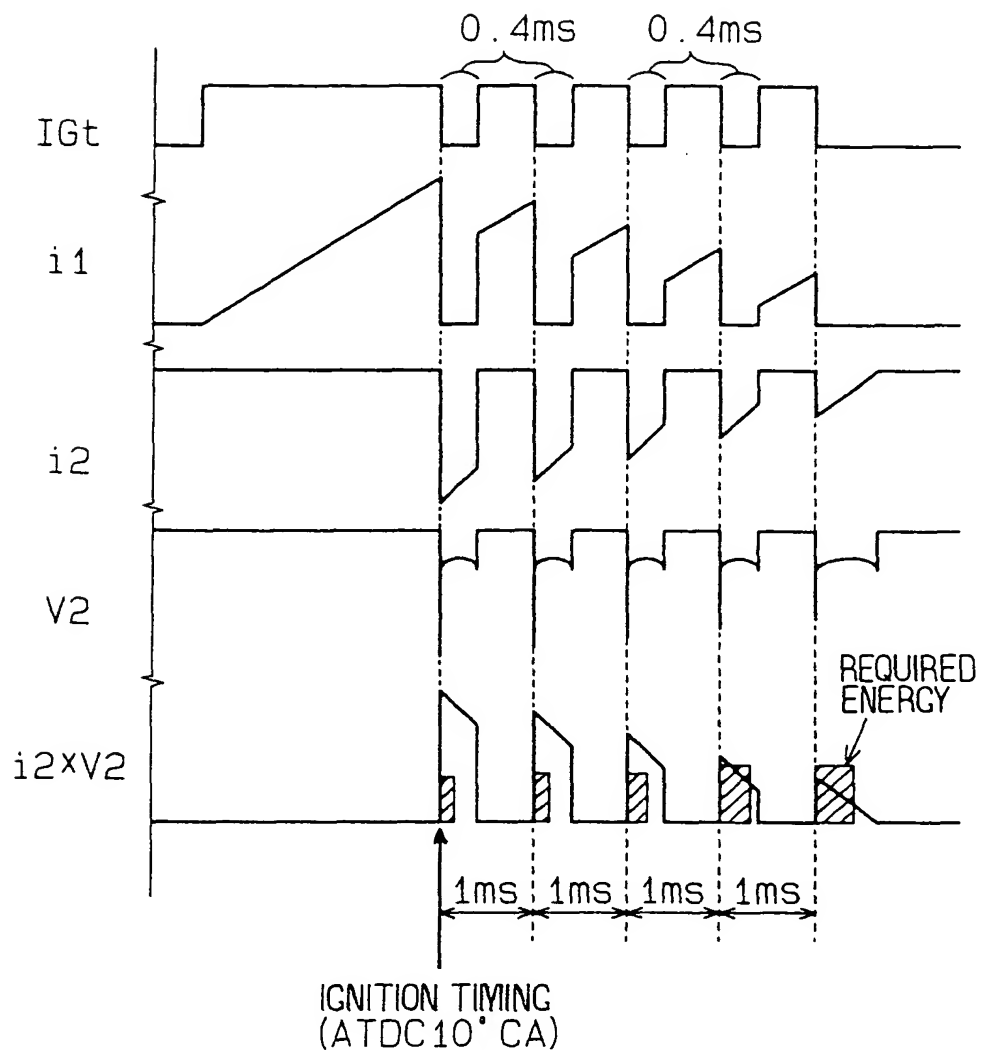


FIG. 14 PRIOR ART



The diagram illustrates an engine control system with two main functional blocks: an ignition control circuit (61) and an injection control circuit (63).

Ignition Control Circuit (61): This circuit is powered by a battery (67) connected to a voltage divider (66, 68) across a battery voltage (VB). An ignition signal is input to an ignition control circuit block. This block controls a transistor (74) through a resistor (75) and a base resistor (76). The collector of transistor 74 is connected to a coil (73) leading to a spark plug (65). The circuit also includes a diode (71), a capacitor (72), and a Zener diode (81) for protection and signal conditioning. A feedback path (77, 78, 79, 80) is connected from the secondary of the spark plug coil back to the base of transistor 74.

Injection Control Circuit (63): This circuit is powered by a DC-DC converter (86) which takes input from a voltage divider (84, 85) across the battery voltage (VB). The DC-DC converter's output is connected to a transistor (88) through a resistor (89). The base of transistor 88 is connected to a diode (91) and a Zener diode (92). The collector of transistor 88 is connected to a transistor (93) through a diode (94). The base of transistor 93 is connected to a diode (95) and a Zener diode (96). The collector of transistor 93 is connected to a solenoid coil (62) through a diode (101). The solenoid coil (62) is connected to ground through a resistor (98). An injection signal is input to a control block (100) which drives the solenoid coil (62) through a transistor (97) and a resistor (99).

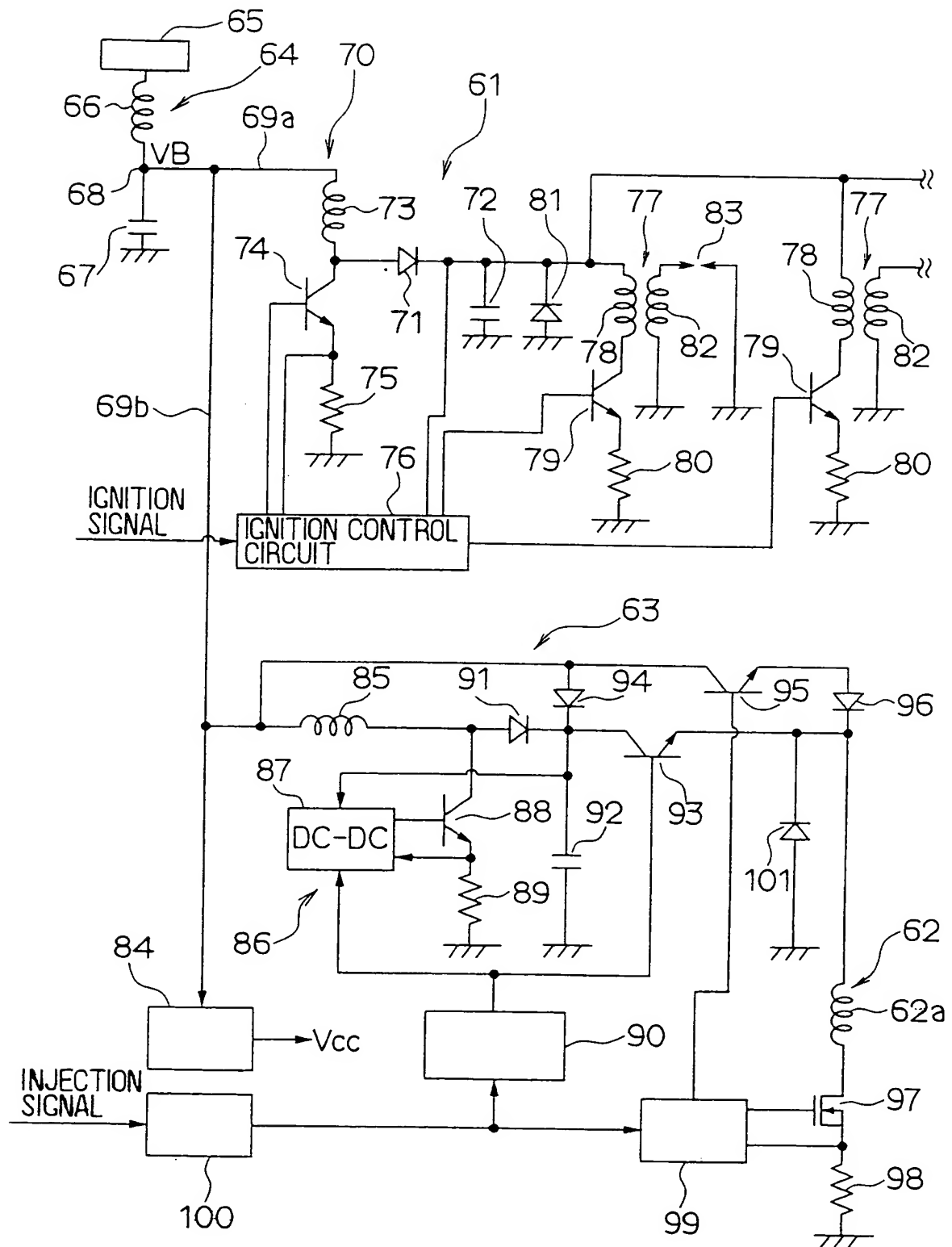


FIG. 16 PRIOR ART

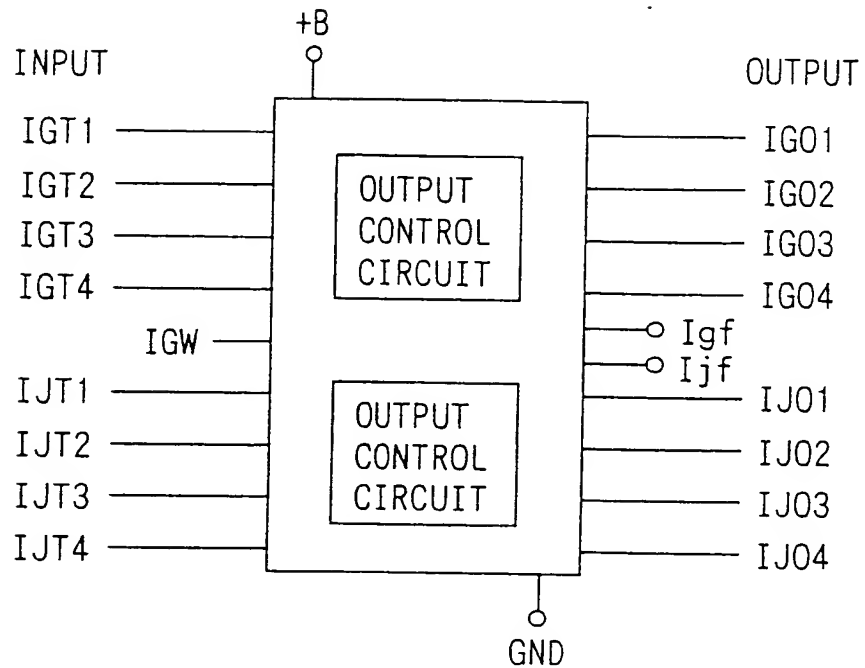


FIG. 17

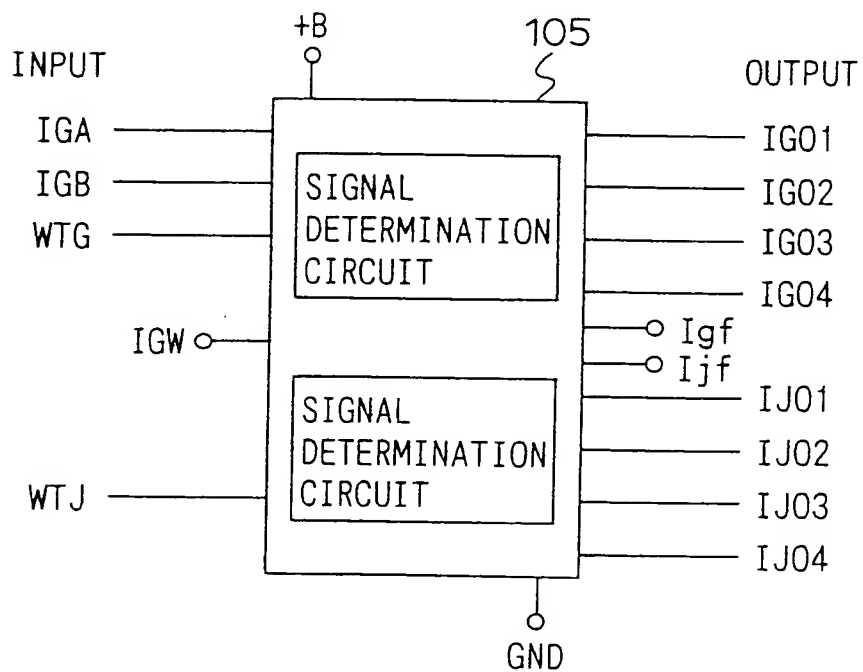


FIG. 18

PATTERNS	IGA	IGB	WTG	WTJ	RESULTS
1	ON	ON	ON	OFF	IG01
2	ON	OFF	ON	OFF	IG02
3	OFF	ON	ON	OFF	IG03
4	OFF	OFF	ON	OFF	IG04
5	ON	ON	OFF	ON	IJ01
6	ON	OFF	OFF	ON	IJ02
7	OFF	ON	OFF	ON	IJ03
8	OFF	OFF	OFF	ON	IJ04

FIG. 19

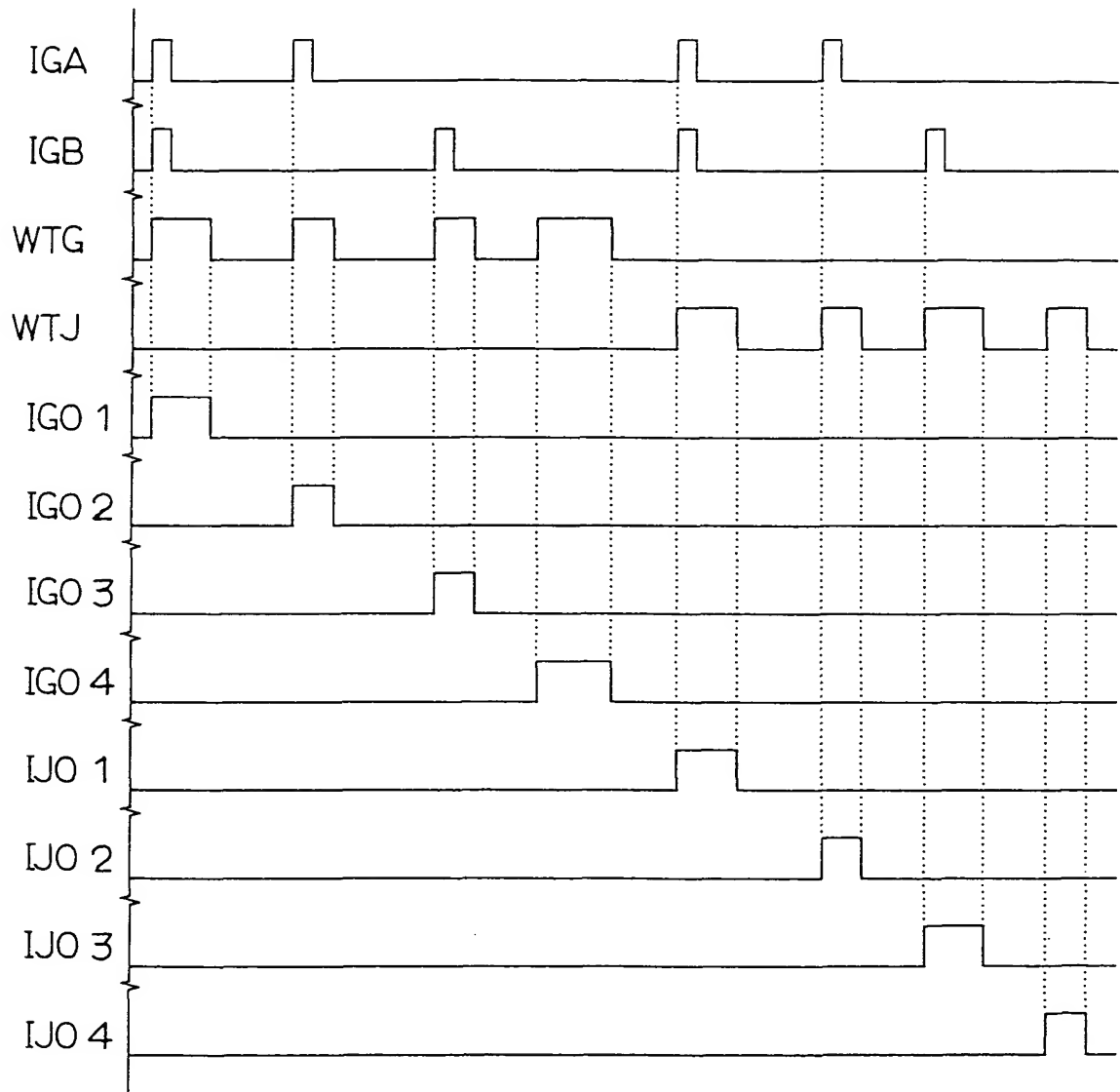


FIG. 20

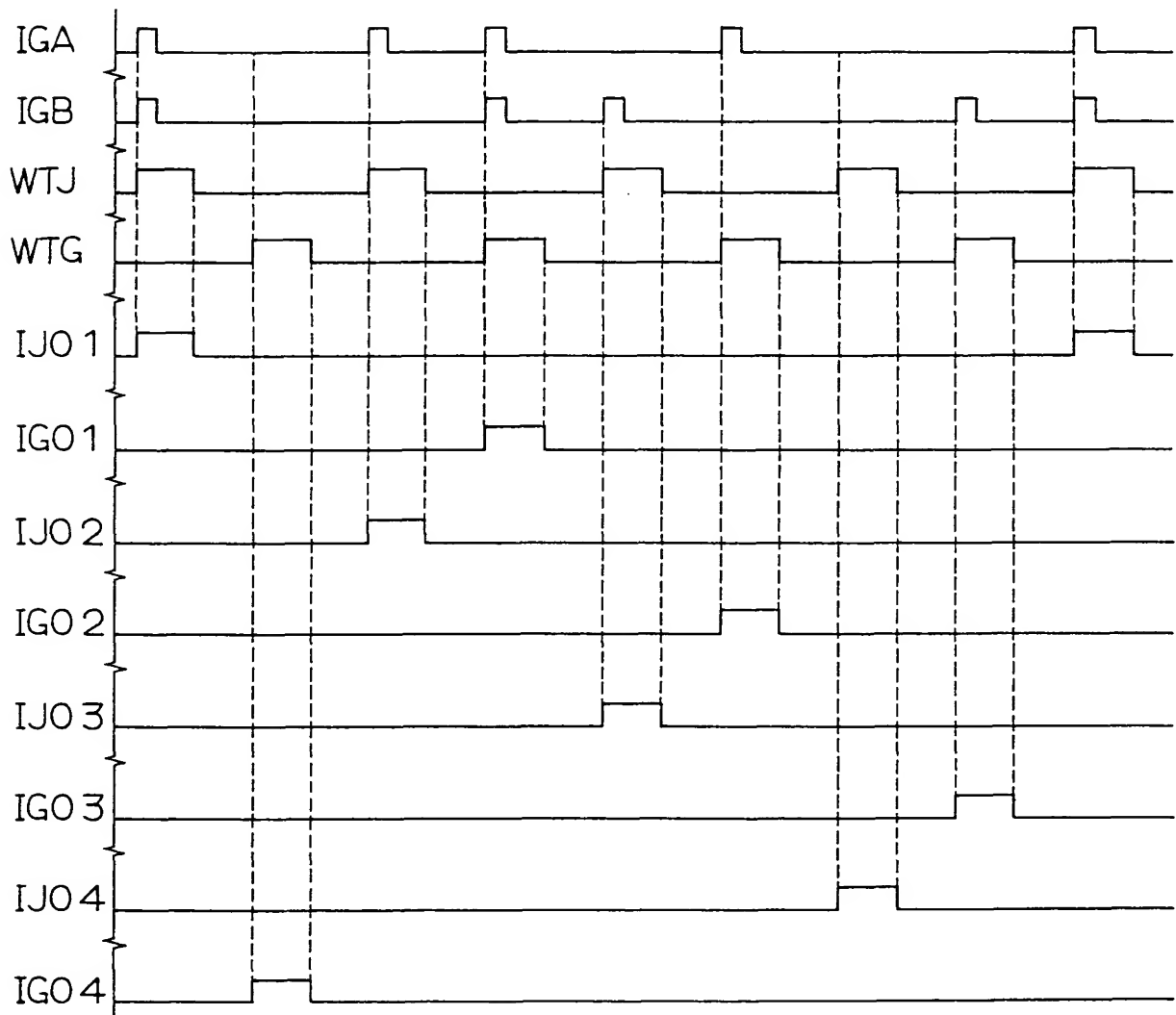


FIG. 21

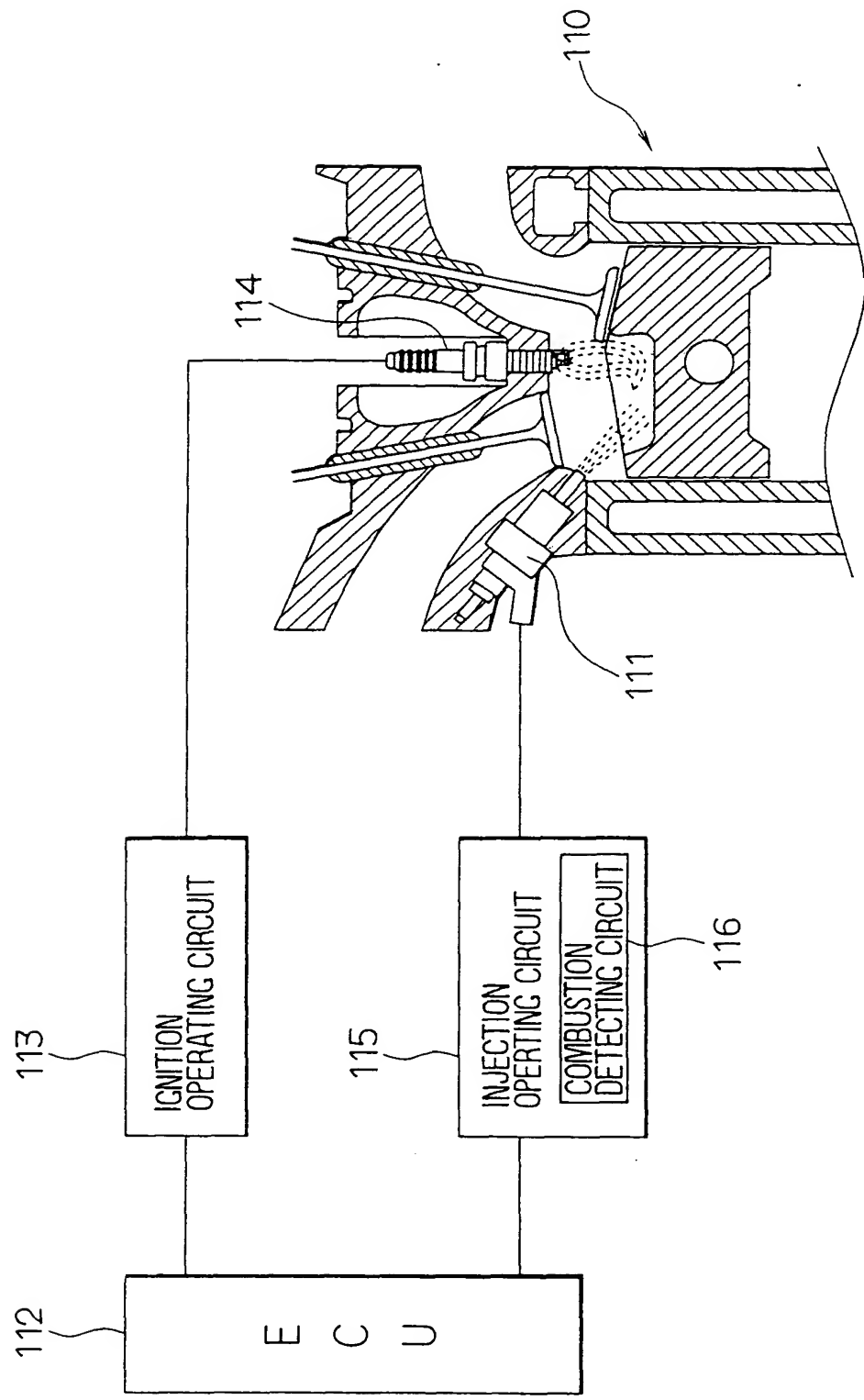


FIG. 22

